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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/050,292	03/30/1998	HYANG YUL KIM	317-127	6647

20413 7590 10/28/2003

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EXAMINER


DUDEK, JAMES A

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/050,292	Applicant(s) KIM ET AL. 	
	Examiner James A. Dudek	Art Unit 2871	

-- The MAILING DATE of this communication appears on the reverse with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,7-9,11-14 and 16-44 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 2,7-9,11-14 and 16-44 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s). <u>20031025</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 7-9, 11-14 and 16-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over '753.

'753 figures 2a and 2b teach a method of producing two domains within a liquid crystal layer (12) by forming said liquid crystal layer with molecules thereof aligned vertically with respect to a substrate (see page two of the translation) where the substrate has two electrodes separated from each other by a selected distance (8,9), and then applying an electric field between the two electrodes (see figure 2b). The domain boundary is inherent since as taught in the specification the forces from left side liquid crystal domain will counter the forces from the right side liquid crystal domain creating a line in the middle.

'753 lacks an explicit teaching of an alignment layer. However, it was notoriously well known to align liquid crystal molecules with alignment layer in order to reduce display blemishes by substantially aligning all the molecules at the substrate interface alike. Accordingly, it would have been obvious to one of ordinary skill at the time the invention was made to combine the well known alignment layer with '753 to reduce blemishes.

Per claim 10, it was notoriously well known to combine a negative compensator plate with liquid crystal cell in order to improve contrast, especially with homeotropically aligned liquid crystal molecule. Accordingly, it would have been obvious to one of ordinary skill at the time the invention was made to combine the well known compensators with '753 to improve the contrast.

753 lacks a transparent metal electrode. However, it would have been obvious to one of ordinary skill at the time the invention was made to combine a well known ITO electrode with 753 to improve transparency and aperture ratio of the cell.

'753 lacks an explicit teaching that the polarizers are crossed on aligned at 45 degree with respect to the electric field direction. However, both of these schemes were well known to improve contrast. Accordingly, it would have been obvious to one of ordinary skill at the time the invention was made to combine the well alignment scheme of aligning crossed polarizers at 45 degrees with respect to the field of 753 to increase contrast.

'753 lacks an active matrix substrate. However, it was well known to form pixels in a matrix with TFT to drive each pixel to improve resolution and produce images other than alpha numeric. Accordingly, it would have been obvious to one of ordinary skill at the time the invention was made to combine the well known active matrix substrate with 753 to improve contrast and the display capabilities.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Response to Arguments

Applicant's arguments filed 2/27/03 have been fully considered but they are not persuasive. Applicant presents two arguments: (1) "The Compensating Plate is Very Inventive" and (2) "The Homeotropic Alignment Layer of this Invention is Notoriously Well Known".

Response the first argument, the Compensating Plate is Very Inventive

Regarding applicant's first assertion that since Nagata has polarizers, it is not obvious to also use compensating plates, this is simply not a correct assertion. If not all, nearly all compensator plates, either negative or positive, are used in combination with polarizers. They perform different functions although they both affect contrast. Input Polarizers typically are used to create linear polarized light and output polarizers are typically used to block or pass the linear polarized light created by the input polarizers. This is a core function of the cell without which most cells would be inoperable. The compensating layers improve contrast/viewing angle by compensating light that leaks through the polarizer that is not supposed to leak. That is, compensators attempt to remove unwanted noise.

The rejection clearly provides motivation, which is improved contrast.

See the below cited references as evidence that negative compensators are well known in VA cells. All the references have both polarizers and compensators.

(1) 5477358 teaches at the first paragraph of column 8 that a negative retarder improves contrast.

(2) 5602662 teaches that a negative retarder improves contrast.

(3) 5757455 teaches at the second to last paragraph of column 9 that a negative retarder to compensate for the perpendicular alignment of the liquid crystal.

(4) 6141075 teaches a negative retarder improves contrast.

Response to the second argument, the Homeotropic Alignment Layer of this Invention is Notoriously Well Known

Applicant's first assertion in support of this argument is one of the motivations for using an alignment layer is not the same as applicant's reason for using an alignment layer. In response to

this argument, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

In response to the traverse of the notorious well known assertion, see the following references for evidence in support of the official notice.

(1) Chapter 5 “**Surface Alignment of Liquid Crystals**” in Bahadur **LIQUID CRYSTALS: APPLICATIONS AND USES** pages 1-63. This article thoroughly explains alignment layers and why liquid crystal displays use them. Cursory review of 5.1 teaches “[t]hese devices require uniform molecular alignment on the glass surface for their quality and/or function [1].”

(2) 6281956 patent teaches vertical alignment layers use in a parallel field scheme. Furthermore, “it should be noted that the liquid crystal molecules align generally perpendicularly to the principal surface of the substrate 11A or 11B as a result of the interactions with the molecular alignment layer film 11a’ and 11b.” Thus, alignment layers are used to align the liquid crystal molecules in a parallel field device.

(3) 5757455 teaches using an alignment layer to align the liquid crystal molecules.

(4) 5666179 teaches using an alignment layer to align the liquid crystal molecules.

(5) 5621558 teaches using an alignment layer to align the liquid crystal molecules.

(6) 5608556 teaches using an alignment layer to align the liquid crystal molecules.

(7) 5477358 teaches using an alignment layer to align the liquid crystal molecules.

In response to the CAFC decisions, motivation was provided and it is blatantly clear to any person of skill in the art that one would be motivated to use an alignment layer to align the molecules.

Response to the interview

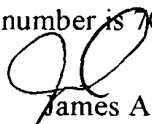
Per our conversation regarding the pixel and common electrode, the 753 shows multiple pairs of electrodes where one electrode of each pair is coupled to ground and the other coupled to a voltage source. The terms pixel and common are loose terms that generally mean an electrode representing the image dot and an electrode representing all the image dots, respectively.

Common electrodes also are supplied a common voltage or ground to all the pixel regions or dots and pixel electrodes are supplied separate voltages to each pixel region or dot. Thus when looking at the figures of 753 the common would be coupled to ground and the pixel would be coupled to the voltage supply.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Dudek whose telephone number is 308-4782. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7721 for regular communications and 703-308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



James A. Dudek
Primary Examiner
Art Unit 2871

October 24, 2003